



## Water concerns in rural Bangladesh: A gendered perspective

*Farhana Sultana and Ben Crow, Bangladesh*

WATER PLAYS A pivotal role in economic activity, as a key input to agriculture and industry, and in human well-being. Access to clean drinking water has conferred many of the health benefits of the industrial world. Few natural resources play so central a role in both economic activities and in health. Because of the prominence of water in production (primarily for irrigation) and in domestic use (drinking, washing, cooking), conflict over water and the effects of gender-influenced decisions about water have far-reaching consequences on human well-being, economic growth and social change. At the same time, social conflicts and social change are shaped and mediated, often in unexpected ways, by the natural conditions in which water occurs.

Concerns of water use and management in Bangladesh, a country of high population density, seasonal fluctuations of water, and general subordination of women, bring concerns of gender issues into the domain of water resources planning in rural Bangladesh. In rural areas, municipal supply of water is not present, and access to water may be more problematic, more differentiated, less secure, and frequently requires substantial expenditures of work-time and money. Access to water is achieved through a range of social relationships falling into four main modes of access:

1. Ownership - of land, providing access to groundwater or a water course, and a pump;
2. Market access - purchase of water, e.g. from the owner of a pump;
3. Common property access - obtaining water from river, pond or public tank through some communal rights of access;
4. State-backed provision - local or national government projects, e.g. municipal tap water, or pumped water in an irrigation project.

Each of these modes of access has particular characteristics, or social dimensions: cost; labor-time; decision-making; historical trajectory or long-term dynamics; response to external shocks. For each category of access, it is possible to identify social conditions which ensure water security for some households and enterprises, and water deprivation for others.

In most rural regions of the global South, access to water is obtained through all four modes mentioned above. The access to water of both households and enterprises may then be highly differentiated by material and other social divisions. Rich and influential households may have pref-

erential conditions of access, and different sources of water, to those of poor households. The quality, reliability and costs of water, for a particular household, will be influenced by a range of characteristics including conditions of the water source, the geographic location of the household or enterprise in relation to the water source, past social investments in water infrastructure, and the social, economic and even political position of a household or enterprise.

From this disaggregation of the social relations of water, it is clear that material inequalities influence water security and deprivation through a range of processes operating at different social levels. These processes include property relations, inequalities of income, state provision, rules of access to common social property, and social status. Conditions of access to water for many poor households constrain both health and livelihood. Poor households generally get access to unsafe water, and their access may also be insufficient to sustain potential livelihoods, for example irrigated agriculture. A recent review of participatory poverty assessments has concluded that better water supplies were consistently perceived by the poor as a high priority. There is thus increasing discourse on ensuring water security for poorer households as an integral part of poverty eradication measures (Barker and van Koppen 1999).

Gender relations influence the social relations of access to water in at least three ways (Cleaver and Elson, 1995). Firstly, there are, in all societies, gender-based divisions of work. As in many societies, Bangladeshi women have primary responsibility for organizing and undertaking domestic work. This work includes a range of activities: maintaining daily life (cooking, cleaning, washing clothes), managing the health of the household, caring for and raising the children. So, where household access to water requires significant input of work-time, this work is frequently done by the women and children of a household. Women tend to work longer hours than men do in many societies. The work involved in gaining access to water may then lead to difficult choices. Access to higher quality water might have to be forgone, for example, in order that children in the household can be kept safe or other household chores completed on time.

Secondly, in Bangladesh, the overwhelming majority of productive assets, that is, land, factories, and finance, are owned or controlled by men. This means that those forms of access to water which involve ownership of property, mode 1 above, tend to be dominated by men. Women also

generally experience disadvantaged access to markets, including markets for water, mode 2. In addition, decision-making in state bureaus, mode 4, and in communal institutions, mode 3, tends to be dominated by men. There are thus reasons to believe that decision-making is male-dominated in all four modes of social access to water.

Thirdly, policy discourse and local norms may situate economic uses of water in a male domain and domestic uses in a female domain. Then, the subordination of women, giving men as a group more social and economic power, may influence priorities for public investment and collective decision-making in water. Uses of water identified with men, such as irrigation, may then be better represented and more knowledgeably discussed in societal forums at all levels, than uses of water identified with women, such as drinking, cooking and washing.

### Drinking water, cooking and health

The expansion of access to groundwater in Bangladesh was heralded as the solution to the propagation of water-borne diseases from consumption of polluted surface water. Groundwater consumption increased over the last few decades as habits changed in the rural areas, with about 97% people having access to tubewell water. With donor, government and NGO support, as well as private installation, the number of tubewells in Bangladesh rose dramatically in the last two decades to over 9 million.

In Bangladesh, women are the main managers of water for domestic purposes (drinking, washing, cleaning, bathing, and cooking) as well as for some subsistence production in homestead gardening or raising of poultry and goats. In rural areas, where there is no municipal network for water provision, water is procured from diverse sources, including tubewells, ponds, canals, ditches, and rivers. Women use water from different sources depending on availability, proximity and purpose of use. Thus, the water supply system in rural Bangladesh is not a fixed system, but a set of water sources about which choices are made, and negotiated, often on a daily basis.

Drinking water is mainly obtained from tubewells (both deep and shallow), while surface water sources are used for other domestic purposes. Deep tubewells have been found to provide better quality water compared to shallow tubewells. These deep tubewells are more expensive, and are likely to be owned by richer households. Access to tubewells depends on whether it is privately owned or publicly owned.

Thus, access to and control over water is differentiated by class in rural Bangladesh; wealthier women have better access to cleaner water than poorer women (Shamim and Salahuddin, 1994). Access to water is also differentiated by location, since those households nearer a functioning tubewell are likely to use groundwater more often. However, any tubewell has to be shared among different users. Tubewells available in public places such as schools, mosques, and bazaars often provide the only source of clean and safe water for rural households that do not have

private tubewells. But these are often broken or inadequately maintained, forcing many to depend on good relations with wealthier households to access private tubewells for water.

Overwhelmingly, proximity dictates the source and use of the water, particularly for poorer and female-headed households. Several trips must be made each day to the nearest tubewell or surface water body to meet water needs. The distance to be covered can range from a few yards to several hundred yards. Women and girls may walk two to five hours each day to fetch water, making several trips each day. Because drinking water is constructed as a domestic responsibility in the female domain, the education of young women may be adversely affected. Often, daughters-in-law or younger women are sent to fetch water, because this is seen as a more menial task by more powerful women in a household. The burden of carrying traditional water pitchers (*Kolsbi*) on the hip can cause difficulty during pregnancy and deformity in posture. Similar complaints have been made against the widely used *Tara* pumps which are difficult and cumbersome to pump in order to procure groundwater (Wickett, 1998). In instances where a long walk is required to reach the nearest functioning tubewell, many families are forced to use closer polluted surface water.

Homestead ponds and canals are often the nearest source of water. But these sources are for used for aquaculture, washing clothes and utensils, bathing, washing domestic animals, and even a place to throw domestic waste. These multiple uses can all contribute to pollution of the surface water source, making it unfit for consumption. Water purification of polluted water is generally undertaken through filtering, boiling, and using water purifying tablets (made of alum), or through a range of indigenous purification strategies. The ability to purify surface water requires money and time and is often practiced by more affluent households. This has consequences for health that thus vary by class.

Rights of access to surface water sources and decision-making about those sources, may be unclear and may vary from one village to another. Conflict over ownership and use of ponds are sometimes reported. Over time, the use of ponds and tanks for aquaculture, and the assertion of private property rights, may further constrain the access of poor households, and increase the work of the women in those households. Increasingly, shrinking surface water sources in general have started to pose problems, as more and more waterbodies are landfilled or dry up, as well as get converted for other economic activities, with increasing population growth, all of which have gendered implications that are often overlooked.

In sum, there are material and gender inequalities in access to water for drinking and cooking water. Access to drinking water is primarily through ownership and common property modes. Market access, in the form of bottled water, has started in Bangladesh in the last few years, but is not widely available in rural areas and is expensive. State-

backed provision in rural areas has been limited to the provision of village tubewells which, as noted, are often inoperable.

### **Irrigation**

Over the last thirty years, agricultural output in Bangladesh has increased dramatically as a result of the Green Revolution. The 'leading technology' of the Green Revolution was the mechanization of irrigation through privately owned pumping of groundwater. In Bangladesh, flood control drainage and irrigation schemes (FCD/I) have crisscrossed the country with irrigation canals, but they have not increased irrigation water supply nearly as dramatically as irrigation tubewells. The rise of tubewells and water markets to distribute tubewell water has been associated with increasing male control over water. New technologies involve new property rights, usually defined as the rights of men. Land rights, in a country with a significant percentage of the rural population landless, establish water rights. The development of irrigation has consolidated men's power over production, and given a new productive asset, irrigation water, to those with land and pumps.

Wider access to irrigation water and the livelihoods it makes possible has been promoted through the management of irrigation tubewells by landless groups. These initiatives have, however, been on a small scale and have had mixed results. In the last two decades, the growth of water markets distributing water surplus to the owner's requirements has been noted, but there has been debate about the equality of these markets and less has been noted about their implications for gender. However, several NGOs have promoted the formation of poor women's pump groups in Bangladesh. Despite some success in few areas, there are, nevertheless, uncertainties about whether women retain control even under these initiatives. The general trend is male domination in irrigation pump schemes and water selling markets 'leading to less control over the incomes from such water assets' by women (Jordans and Zwartveen, 1997).

State-backed irrigation projects in Bangladesh, as elsewhere, have overlooked non-monetized agriculture and women's production. Field observation suggests that almost all rural households have kitchen gardens which are worked and managed by women. There are few studies of kitchen gardens anywhere in the world. In Bangladesh, kitchen gardens are watered and maintained by women, and provide significant contributions to nutrition and household food security. These water uses and needs have not been adequately included in current water resource schemes. Irrigation pump water is generally used for field crop production. Those aspects of production which are managed by women (primarily fruit and vegetable production and the rearing of livestock) do not have government-backed irrigation support.

Furthermore, the expanding use of groundwater irrigated agriculture has had impacts on drinking water sup-

plies. Motorized irrigation tubewells can lower the groundwater below the level to which shallow wells can operate. Consequently, many shallow, handpump tubewells are left inoperative for several weeks or months during the dry season. This lowering of groundwater tables creates an important, but largely unreported, conflict over water. In this conflict the dominant, and male-dominated, priority of government, economic growth, clashes with lesser priorities of government, domestic water supply, reflecting women's practical interests.

In sum, the expansion of irrigation in Bangladesh has been through ownership and market modes of access, tending to favor richer households and to enhance men's control of water. There have been some counter-initiatives to give control of pumps to the landless and to women, but they remain small in scale and of uncertain efficacy. The importance of women's productive activities, livestock and homestead gardens, has generally been overlooked in state schemes and the provision of water from private irrigation water from these sources is not known. Although some irrigation tubewells are used to provide some domestic water, they are often situated at some distance from a family homestead. Homestead tubewells are thereby used for such production needs by women.

### **Arsenic contamination of groundwater**

The recent crisis of arsenic contamination of groundwater is structured in several ways by class and gender. The geophysical distribution of contaminated water means that rich households, with deep tubewells, may have access to uncontaminated water at lower aquifer depths. However, the situation of these deeper tubewells may mean that using them for drinking water will involve greater input of labor for women who do not own them. Even with complete identification of contaminated wells, rural households are left facing a dilemma: use river or pond water and face water-borne disease, or use groundwater, if it is still within reach of handpumps, and face slow poisoning from arsenic. Families without viable alternative sources of drinking water continue to use arsenic-contaminated tubewell water. Often, when the symptoms of arsenicosis are not apparent, it is difficult to convince families to stop consuming water from contaminated tubewells, if it is located in their homestead or nearby and they have gotten used to consuming water from that tubewell. And since development of arsenicosis takes several years, people often unwittingly expose themselves to the slow poisoning when there is no other viable and affordable alternative for water. At present the treatment of arsenic-contaminated water is not widely available and may be too expensive for most rural households.

The identification of contaminated wells may lead to greater conflict over uncontaminated water (i.e. from the tubewells that are not marked red in the contaminated tubewell identification drive), and greater hardship for women procuring the water. The importance of women's

labor time is seen to be a critical factor in the water source that is used. The constraints on women's time, and the additional work-time involved in obtaining water from non-contaminated sources, can contribute to the continued use of contaminated wells.

The gendered impacts of arsenic contamination of water are also becoming evident in other areas of women's lives: health and social status. The worse nutritional status of poor households, and particularly the women of those households, may mean that arsenic contamination has more severe physiological consequences for them. Since arsenicosis causes skin ulcers and lesions, and many other symptoms, women and girls afflicted with arsenic poisoning are suffering disproportionately both in terms of lack of medical attention and social unacceptability. Despite the awareness campaigns, fears of arsenicosis being contagious is prevalent. All this points to the serious social consequences of groundwater poisoning for women in particular, even if entire families are affected by arsenicosis in parts of Bangladesh.

### Washing water, sanitation and privacy

Women in rural Bangladesh are careful to maintain privacy and socially acceptable decorum in bathing and cleaning in public. Most households bathe in ponds around the homestead, and women often bathe at different times than men, and may bathe clothed to maintain decorum. If women use tubewell water for washing, usually in better off households, a makeshift enclosure of banana leaves is sometimes used. Few rural households have closed latrines, but the poor are especially unlikely to have them, who often await nightfall to use the latrines. This makes it more difficult for women to maintain privacy in a conservative culture that emphasizes women's decorum.

In this case also, there are class and gender inequalities. Rich households are much more likely to have a private pump, pond or tank within, or in close proximity to, their household compound. In these households, women can maintain their privacy in bathing. Poor women may only be able to obtain privacy if they bathe at times when men are not around the ponds, adding a further pressure on their time. Here, too, trends toward the private appropriation of surface water sources may further limit poor women's ability to meet social norms. Similarly, the increasing conversion of homestead ponds for fish culture by men is reducing the access of women to clean pond water for bathing and cleaning, and often leading to increased skin problems, as well as increasing presence of men in and around the ponds.

### Conclusion

Gendered implications for water use and water resources development in rural areas of Bangladesh are thus not always articulated, and a large majority of the population is marginalized in their needs and livelihood strategies.

However, the recent National Water Policy of 1999 officially recognized the interests of women and uses the rhetoric of paying greater attention to gendered needs, perception and use of water resources. However, the need to take a gender sensitive approach in water resource planning has to carefully address the various sectors and activities in which nature plays a pivotal role and not just give lip-service to gender sensitivity. Although the discourse of water resources planning is changing now in Bangladesh, increasingly reflecting the need for an integrated and holistic approach, only time will tell how equitable and sustainable this is in rural areas of Bangladesh for the vast majority of its population. Greater attention to the issues raised in this paper would benefit such goals.

### References

- Barker, R., and B. van Koppen (1999). Water scarcity and poverty. IWMI Water Brief 3. Colombo, Sri Lanka: International Water Management Institute.
- Cleaver, F., & Elson, D. (1995). Women and Water Resources: continued marginalization and New Policies (Gatekeeper Series No. 49). IIED.
- Jordans, E. and M. Zwarteveen, 1997. A well of one's own: Gender analysis of an irrigation program in Bangladesh. Colombo, Sri Lanka: International Irrigation Management Institute (IIMI)
- Koppen, B. van and S. Mahmud, 1996. Women and waterpumps in Bangladesh: The impact of participation in irrigation groups on women's status. U.K.: Intermediate Technology Pub.
- Shamim, I. And K. Salahuddin, 1994. Energy and water crisis in rural Bangladesh - Linkages with women's work and time. Dhaka: Women for Women.
- Van Wijk, C, E. de Lange, & D. Saunders, (1996). Gender aspects in the management of water (Women and Natural Resources Management). Natural Resources Forum, v20(n2 (May, 1996)), 91.
- Wickett, E. (1998). People's participation and social impact assessment in water resources planning. Final Draft, National Water Management Plan, Ministry of Water Resources, Government of Bangladesh.

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FARHANA SULTANA, United Nations Development Programme, Dhaka, Bangladesh.  
BEN CROW, Department of Sociology, University of California, Santa Cruz, USA